SECRETONEURIN- IMMUNOREACTIVITY IN THE EARLY RAT BRAIN: DISTRIBUTION AND MOLECULAR CHARACTERIZATION

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Secretoneurin (SN) is a novel neuropeptide processed from secretogranin II which has recently been described in the human and rat central nervous system. One of the major pathways stained for SN-immunoreactivity was the continuum between the nucleus accumbens and the centromedial amygdala, referred to as extended amygdala. In the present developmental study we investigated the immunohistochemical distribution of SN in embryonic and neonatal rats . Embryonic date (ED)-16 was the first date displaying specific SN-immunoreactivity. At ED-20, SN clearly labelled the continuum from the nucleus accumbens to the centromedial amygdala. In the nucleus accumbens and the caudate putamen bundles of SN-immunoreactive fibers appeared at ED-20. In neonatals a patchy distribution of SN-immunoreactive structures was observed. The staining intensity of these patches decreased slightly at postnatal day (PD)-10 and PD-15, whereas SN-immunoreactivity was increasing in intensity in the nucleus accumbens and bed nucleus of the stria terminalis. Already at ED-20 the extended amygdala was visualized using SN-antisera, but there were still distinct changes in SN-immunoreactivity during development in specific parts of this system. These changes could be correlated with the different functional significance of those parts. To investigate the processing of secretoneurin from secretogranin II at different developmental stages, we extracted rat brains at ED-14, 16, 18 and at PD-1, 5, 10 and 15 and subjected the extracts to HPLC with a gel filtration column. At all stages investigated, the main peak of immunoreactivity corresponded to secretoneurin indicating that the processing enzymes necessary for production of the peptide secretoneurin from secretogranin II are developed before ED-14.